

DAILY HOMEWORK QUIZ

For use after Lesson 2.5, pages 82-87

1. Identify the hypothesis and the conclusion of the if-then statement.

If the temperature begins falling, then the rain will change to snow.

2. Rewrite the statement as an if-then statement.

The measure of a right angle is 90° .

3. What can you conclude from the given true statements?

If two lines are parallel, then they never meet. Two lines are parallel.

4. Write the if-then statement that follows from the pair of true statements.

If the rain becomes sleet, the roads will ice over. If the roads ice over, then school will be delayed.

2.6 Properties of Equality and Congruence**Properties of Equality and Congruence**

Reflexive Property $a = a$ (Or \cong)

Ex: $AB = AB$ $\overline{AB} \cong \overline{AB}$
 $m\angle 1 = m\angle 1$ $\angle 1 \cong \angle 1$

Symmetric Property If $a = b$, then $b = a$. (Or \cong)

Ex: If $AB = CD$, then $CD = AB$.
 If $\angle 1 \cong \angle 2$, then $\angle 2 \cong \angle 1$.

Transitive Property If $a = b$, and $b = c$, then $a = c$. (Or \cong)

Ex: If $AB = CD$, and $CD = EF$, then $AB = EF$.
 If $\overline{AB} \cong \overline{CD}$, and $\overline{CD} \cong \overline{EF}$, then $\overline{AB} \cong \overline{EF}$.

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The Addition Property—If $a = b$ and $c = d$, then $a + c = b + d$.
 (Add an equal value to BOTH sides of the equation.)

Ex.

Ex.

$$\left. \begin{array}{l} \text{If } x - 8 = 9 \\ \text{then } x = 17 \end{array} \right\} \left. \begin{array}{l} \text{If } y - 4 = 2 \\ \text{then } y = 6 \end{array} \right\}$$

The Subtraction Property—If $a = b$ and $c = d$, then $a - c = b - d$.
 (Subtract an equal value from BOTH sides of the equation.)

Ex.

Ex.

$$\left. \begin{array}{l} \text{If } x + 2 = 9 \\ \text{then } x = 7 \end{array} \right\} \left. \begin{array}{l} \text{If } \underline{AB = CD} \\ \text{then } \underline{AB - XY = CD - XY} \end{array} \right\}$$

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The Multiplication Property—If $a = b$, then $a \bullet c = b \bullet c$.
(Multiply an equal value to BOTH sides of the equation.)

Ex. $\frac{1}{2}x = 10$ } If $m \angle 1 = m \angle 2$
then $x = 20$ } then $2 \cdot m \angle 1 = 2 \cdot m \angle 2$

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The Division Property—If $a = b$ and $c \neq 0$, then $\frac{a}{c} = \frac{b}{c}$.
(Divide an equal value from BOTH sides of the equation.)

Ex. $2x = 40$ } If $4x = 28$
then $x = 20$ } then $x = 7$

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The Substitution Postulate—If $a = b$, then a can be substituted for b in any equation or inequality.

Ex. If $x + y = 13$ and $y = 5$, then $x + 5 = 13$.

Ex. If $m \angle 2 = 40$ and $m \angle 1 = m \angle 2$,
then $m \angle 1 = 40$

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Fill in the reasons why for each step.
Examples:

1. $2x - 3 = 13$
 $2x = 16$
 $x = 8$

Given
Add.
Div.

2. $4x = 8$
 $x = 2$

Given
Div.

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3. $\frac{1}{2}x + 2 = 11$
 $\frac{1}{2}x = 9$
 $x = 18$

Given
~~Subst.~~
~~Div~~ ~~Mult~~

4. $7 = 3x - 5$
 $12 = 3x$
 $4 = x$
 $x = 4$

Given
~~Add~~
~~Div~~
~~Symmetric~~

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Justify each statement.

5. *Reflexive* $m\angle 1 = m\angle 1$

6. *Add.* If $m\angle 1 = m\angle 2$, then $m\angle 1 + m\angle 3 = m\angle 2 + m\angle 3$

7. *Mult.* If $AB = CD$, then $2 \cdot AB = 2 \cdot CD$.

8. *Symm* If $RS = XY$, then $XY = RS$

9. *trans* If $m\angle A = m\angle B$, and $m\angle B = m\angle C$, then $m\angle A = m\angle C$

10. *Div* If $2 \cdot m\angle 1 = 90$, then $m\angle 1 = 45$

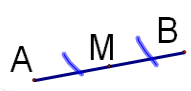
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Other things we already know:
 Vertical \angle s are \cong ; Def. of midpoint; Def. of angle bisector; Def. of supplementary angles; Def. of complementary angles; Segment addition postulate; Angle addition postulate; Congruent complements theorem; Congruent supplements theorem

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Give the reason for the conclusions below.

11. Given: M is the midpoint \overline{AB}
 Conclusion: $AM = MB$
 Reason: *def. of midpt.*



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12. Given: $\angle 1$ and $\angle 2$ are complementary.

Conclusion: $m\angle 1 + m\angle 2 = 90$

Reason: _____

def. of complementary
angles

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3. Given: diagram to the right

Conclusion: $CA + AT = CT$

Reason: _____

C A T

Segment Add. Postulate

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14. Given: diagram

Conclusion: $m\angle ABD + m\angle DBC = m\angle ABC$

Reason: _____

Angle Add. Postulate



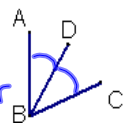
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15. Given: \overrightarrow{BD} bisects $\angle ABC$

Conclusion: $m\angle ABD = m\angle DBC$

Reason: _____

def. of Angle Bisector



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16.

Given: $DW = ON$
Prove: $DO = WN$

Statements	Reasons
1. $DW = ON$	1. Given
2. $DW = DO + OW$; $ON = OW + WN$	2. Segment Add Post.
3. $DO + OW = OW + WN$	3. Subst.
4. $OW = OW$	4. Reflexive
5. $DO = WN$	5. Subtr.

Reasons to choose from for #16

Reflexive; Given; Segment Addition Postulate; Substitution; Subtraction

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